Space Weather Forecast

Issued on Saturday 19 October 2024 at 13:26 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Further Moderate flares likely, mainly day 1-2 (19-20 Oct). Chance of G1 Minor Storm intervals, mainly days 3-4 (21-22 Oct).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate with four Moderate class flares, all from a region that is difficult to observe, with its leader spot now moving onto the far-side over the west limb. Including this region, there are eight sunspot groups on the disc. The other regions are relatively simple and stable. with the other main exception probably the small region near the eastern limb, with some small spots becoming evident around its leader as it moves into a clearer view, however this currently remains inactive.

No Earth-directed CMEs (coronal mass ejections) were observed.

Solar Wind / Geomagnetic Activity: A weak enhancement in the solar wind was likely due to interactions with the southern edge of the fast winds from a coronal hole. Solar winds speeds, as observed increased from background to slightly elevated, 350 km/s to around 400-450km/s. Interplanetary Magnetic Field (IMF), was Moderate at first but eased to Weak by 19/0600 UTC. The north-south component was turbulent, but favoured a negative (southward) orientation for much of the period. Geomagnetic activity was Unsettled to Active (Kp3-4), with one period of G1 Minor Storm (19/0000-0300UTC).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background, with no Solar Radiation Storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is forecast with isolated Moderate class flares likely. These most likely on day 1-2 (19-20 Oct) from the region on the west limb.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Further spells of slightly elevated to elevated winds remain possible from any further interactions with the faster solar winds from the large coronal hole on the northwest disc. A further enhancement from is then possible late day 3 (21 Oct) and into Day 4 (22 Oct), due to the fast solar winds from a smaller coronal hole, but one that is better located to affect Earth. Mainly Quiet to Unsettled geomagnetic activity is forecast, but with a chance of isolated Active to G1 Minor Storm intervals from any

---

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

further enhancement days 1-2 (19-20 Oct), then increasing to Unsettled to Active with G1 Minor Storm intervals likely, late day 3 or day 4 (21-22 Oct).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background, with no Solar Radiation Storms expected.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	Yes	30	10	20	50
Strong	**G3**	No	1	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	Yes	70	70	60	60
Very Active	**R3-R5 (X Class)**	No	10	10	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	15	10	5	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.